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Developing a Technical Description Document

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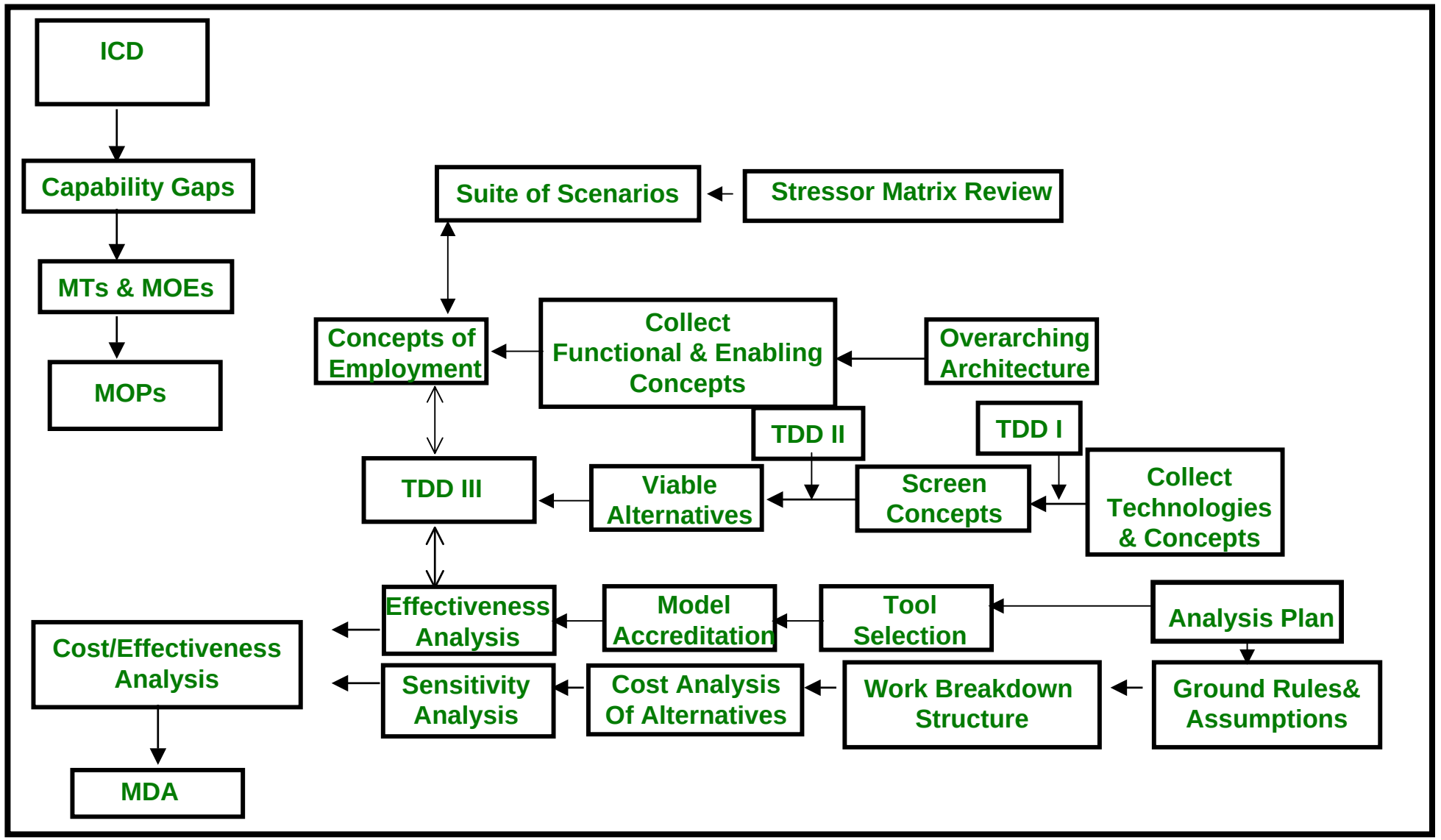
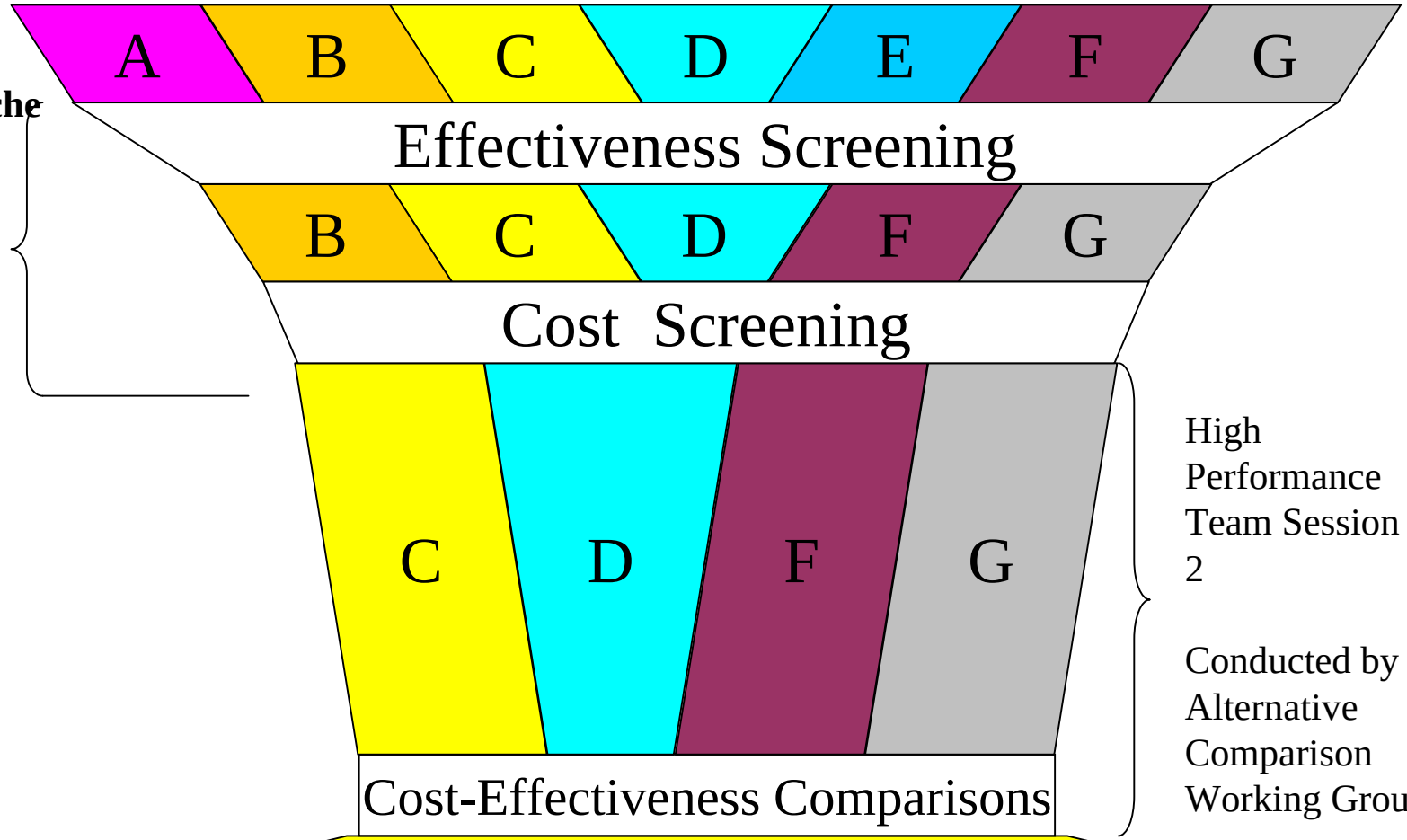
Outline

- AoA Process Flow
- Why develop a TDD?
- Problem Statement
- TDD Approach
- Level I Sample
- Level II Sample
- Level III Sample
- Benefits

AOA Process Flow



Performance Measures & Alternatives: Notional Screening of Alternatives



Possible Solution Concepts/Approaches

High Performance Team Session # 1

Conducted by Alternative Comparison Working Group

High Performance Team Session # 2

Conducted by Alternative Comparison Working Group

FSA

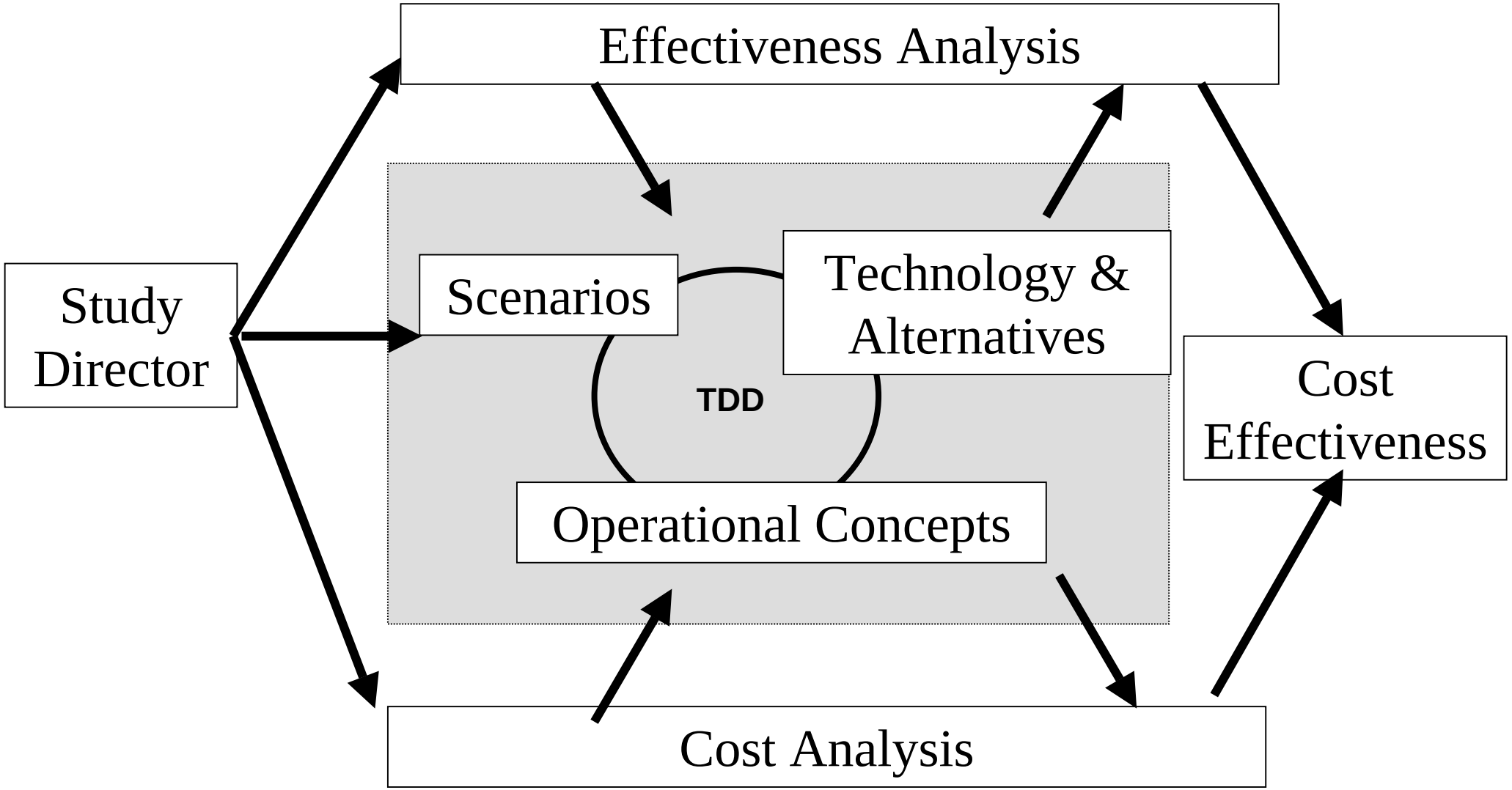
AoA

Possible AOA Alternatives
(for detailed analysis)

Why is the TDD so important?

- **Ensures the technical data for each alternative is consistent across the working groups**
- **Provides a centralized data source**
  - **Promotes data consistency across working groups**
  - **Eliminates duplication of effort**
  - **Provides a venue for configuration control**
  - **Increases accessibility to data**
- **Influences the outcome of the cost/effectiveness analysis**

How does the TDD Influence the Cost Effectiveness Analysis?



Problem Statement

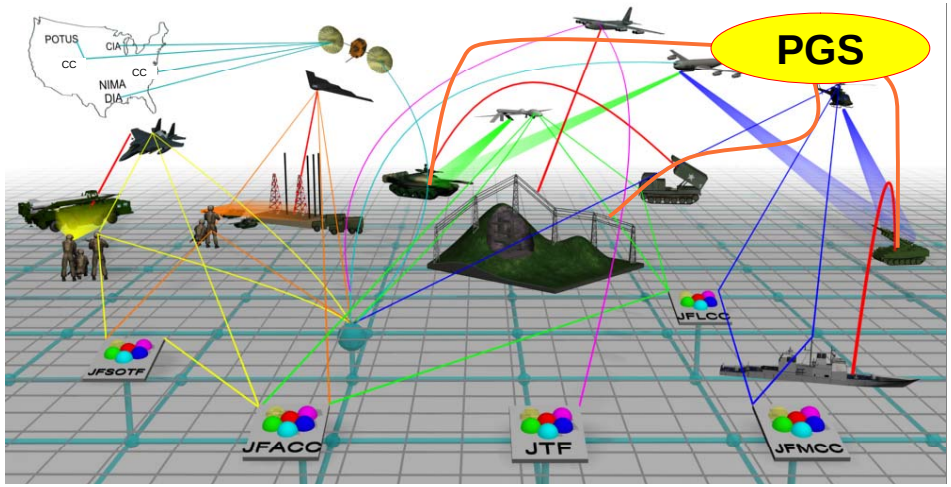
- **Develop a methodology and format to help standardize the development of a Technical Description Document (TDD) for AoA efforts**
  - **Currently no formal process or format for collecting or documenting TDD data exists**
  - **Recent programs have struggled with identifying and collecting the necessary data to perform effectiveness and cost analysis for AoAs**
  - **Creating a standard approach across Services for collecting TDD data would be productive**
- **Looking for input from MORSS participants to assist in improving the process**

What is the Best Approach in Developing a TDD?

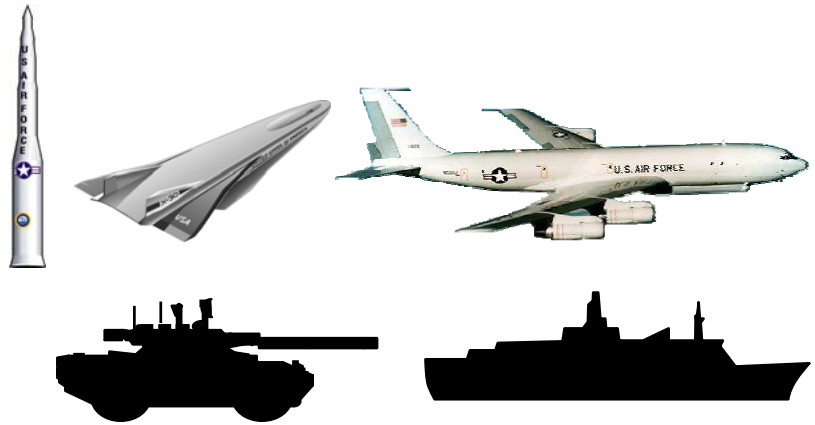
- **Level I: concept overview slide (Quad chart)**
- **Level II: high-level concept description**
  - **Facilitates first order screening and analysis**
  - **Provides a mechanism for the TAWG to summarize technical data from the RFIs**
  - **Level of detail appropriate to wide range of potential solutions**
- **Level III: detailed alternative description should facilitate detailed effectiveness and cost analysis**
  - **It is an expansion of Phase Two information to include technical details for modeling**
  - **Will be much more focused to the proposed analysis approach (i.e. cost and effectiveness models)**

Level I Sample

Overarching Architecture



System Concept Description



- **Cost, Schedule, Risk Summary**

- **Concept of Employment**
- **Assumptions**

High Level Summary

Level II Sample

Key Performance Attributes (Objectives)

- Range
- Payload
- Lethality
- Survivability
- Basing
- Etc

Risk

- Technical
- Cost
- Schedule IOC/FOC

Concept of employment

Rough Order of Magnitude Cost Estimate

RFI Screening Criteria

Level III Sample

WBS #	Notional WBS Element
1.0	Space System
1.1	Launch Vehicle
1.2	Orbital Transfer Vehicle
1.3	Space Vehicle
1.4	Ground C3 and Mission Equipment
1.5	Flight Support Operations and Services
1.5.1	Mate/Checkout/Launch
1.5.2	Mission Control
1.5.3	Tracking and C3
1.5.4	Recovery Operations and Services
1.5.5	Launch Site Maintenance/Refurbishment
1.6	System Test and Evaluation
1.7	Training
1.8	Common Support Equipment
1.9	Initial Spares and Repair Parts
1.10	Disposal

Alternative 1			System 1
MODEL	REQUIRED INPUT	SOURCE (input data)	
Model 1			
	Over all CEP (in feet)	Model 3	
	Range in kilometers (minimum)	Model 2	
	Range in kilometers (maximum)	Model 2	
MODEL	REQUIRED INPUT	SOURCE (input data)	
Model 2			
	Coordinates/Altitude of launch site	Threats & Scenarios WG	
	Coordinates/Altitude of target site	Threats & Scenarios WG	
	Vacuum specific impulse of propulsion system (ISP and thrust for each stage)	Model 6	Stage 1- X sec Stage 2 -Y sec Stage 3- Z sec
	Weight breakdown of concept	Model 6	Total Weight (lbs) Stage 1: A Stage 2: B Stage 3: C Propellant Weight (lbs) Stage 1: D Stage 2: E Stage 3: F Inert Weight (lbs) Stage 1: G Stage 2: H Stage 3: I
	Vacuum thrust versus time for each stage	Model 6	Stage 1 J lbs Stage 2 K lbs Stage 3- L lbs
MODEL	REQUIRED INPUT	SOURCE (input data)	
Model 3			
	Center of Gravity (CG) location from the projectile nose tip		
	Xcg (in)	AFRL	
	Ycg (in)	AFRL	
	Zcg (in)	AFRL	
	Weight moments of inertia		
	Ixx	AFRL	
	Iyy	AFRL	
	Izz	AFRL	

Cost and Effectiveness Model Specific Data

Benefits of a Three-Level TDD Approach

- **Each level provides increasing detail about the AoA concepts and alternatives**
- **Provides a common set of expectations about what alternative information and level of detail will be provided at each stage of the process**
- **Extends understanding to the contractors who are responding to Requests For Information (RFI)**
- **Allows the contractors to respond in a common form and format**
- **Provides continuity with change of leadership**
- **Fits within the continuum of analysis from FSA through AoA**

Questions?